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Laudatio for Professor Karl Gademann

Laureate of the National Latsis Prize 2011

at the occasion of the Award Ceremony
on 12 January 2012 at the City Hall, Berne

by Dr. Hans-Ulrich Blaser
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It is with special pleasure that I introduce Karl Gademann, who has been awarded the Latsis Prize 2011 for (here I cite the original text) "une contribution de haut niveau au progrès de la connaissance scientifique dans le domaine de la synthèse totale de produits naturels d'intérêt biologique".

The reasons that this is a special pleasure for me are both scientific and personal. The scientific reason is that 2011 was the Year of Chemistry and it is therefore very appropriate (but of course also a bit lucky) that a chemist has been chosen as prize winner. Personally, I am very happy to introduce Karl Gademann, because I got to know him when he just started his independent career and applied for his first SNF grant. And as an industrial chemist, I am pleased that for the first time in the history the National Latsis Prize the winner is actually an experimental organic chemist. The three predecessors were all physical chemists with a theoretical background.

Karl Gademann studied chemistry at the ETH Zürich where he received the diploma in chemistry in 1996 and the Dr. sc. nat. in 2000. Both diploma and doctoral thesis were carried out under the guidance of Prof. Dieter Seebach and dealt with the investigation of beta-peptides. After a postdoctoral stay at Harvard University with Prof. Eric Jacobsen where he worked on inverse electron demand hetero-Diels-Alder reactions, he returned to the ETH Zürich. There he started his independent career in 2002 as "Habilitand" associated with the group of Prof. Erick Carreira at the Laboratory of Organic Chemistry.

Being for the first time responsible not just for carrying out high-quality experiments but also for the choice of the research topic is a very important stage in any academic career. To strike the balance between a challenging and risky (but hopefully highly rewarding) project and a more modest topic with higher chance of success is a very difficult decision. You will probably not be too surprised that Karl Gademann chose the risky approach. Even though work with his mentors up to that point dealt with methodological topics he dared to tackle a very different challenge, namely the total synthesis of natural products.

The first target he chose was the peptide alkaloid anachelin. He carried out spectroscopic studies to establish its structure in solution and within two years successfully completed its total synthesis. This resulted in his first publication in the prestigious journal Angewandte Chemie, an important milestone for any chemist. Based on a biogenetic hypothesis, he developed a very effective synthetic strategy which also allowed to access analogs, i..e. molecules with slight structural changes. The successful assembly of this molecule was definite proof that Karl Gademann has mastered synthetic methodology in a number of different areas, as the molecule includes stereochemically challenging polyketide, peptide, and alkaloid structural motifs.

In the context of these investigations Dr. Gademann started to considered broader questions concerning the biological role and the biosynthesis of this unusual bacterial secondary metabolite. He started collaborations with biological groups in Zürich and Brystol in order to determine and study the unusual mode of action of anachelin, which functions as both a growth promoter for cyanobacteria and a growth inhibitor for green algae. The main motivation for this endeavour was understanding the origins of toxic algal blooms, which are a threat to livestock, humans, and the global ecosystem.

After this important achievement, Karl Gademann expanded his research spectrum into several new areas. There is no time to go into any detail, but in addition to the total synthesis of several biologically active natural products and synthetic analogues, new projects were initiated focusing on the search and isolation of new bioactive compounds from natural sources, investigation of their biological properties, therapeutic potential or their ecological role. Just to mention a recent example, he has just started an interdisciplinary project on natural products and synthetic analogues aimed at enhancing memory and learning ability. Compounds of this type could provide leads for pharmaceutical research in the field of neurodegenerative processes related to Parkinson's or Alzheimer's disease.

In addition, he also got involved in the development of bioactive materials by anchoring natural products or pharmaceuticals to inorganic supports such as titania or glass.

Let me characterize the scientific approach and profile of Karl Gademann with the words of on of his former mentors: "The scholarly research program Dr. Gademann set up is characterized by breadth and depth. His program defies a narrow definition (ie total synthesis chemist), as he has admirably demonstrated how he can start a project that is focused on a specific goal (i.e. total synthesis of anachelin) and evolve it to a host of interesting and pertinent questions beyond those that surface in the initial inquiry. I applaud his broad interest rooted in chemical synthesis and chemistry; I believe he provides an important example of how chemistry can remain relevant in the future. His is not a program that follows along well-trodden, well-established pathways, but rather one that is marked by freshness, innovation, and far-sightedness."

Clearly, other people are of the same opinion and Dr. Gademann was offered an assistant professor position at EPFL in 2006 right after completion of his habilitation. There he built up a highly productive research group and established an internationally competitive research program. In 2010 he moved to the University of Basel as Associate Professor. His scientific standing is also evident from the several awards that he received, among them a European Young Investigator Award 2007 and the Ruzicka Prize 2009.

Let me come back to the Year of Chemistry. As you are well aware the image of chemistry among the general public is ambivalent and sometimes downright negative. Among other things, the Year of Chemistry was also an occasion to remind the world about the impact of chemistry for its future well-being. The reason I mention this is that Karl Gademann is very keen in participating in this dialogue and is ready to leave the "academic ivory tower" to communicate with the general public. Among other things he presides Platform Chemistry of the Swiss Academy of Sciences which engages "in a dialogue with politics and society based on its scientific expertise".

In closing, I would like to congratulate Karl Gademann and wish him much scientific success and personal satisfaction in the years to come.

Bern, 12 January 2012